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REVIEWS

Britton and Rose's *Cactaceae**

The recent death of Andrew Carnegie, who lived only a few weeks after this volume was issued, recalls the publication of *Carnegiea gigantea* in 1908, when the senior author first associated the iron master with the cactus family. To many the assignment of his name to the giant cactus appeared at that time a doubtful compliment either to the cactus or to Mr. Carnegie. It is not without interest, then, that the chief agency which he set up for the advancement of science should have sought out the authors of the present great volume who have abundantly justified the wisdom of that association. For the Carnegie Institution has issued, and the authors have prepared, the most sumptuous botanical publication since Dyke's "The genus *Iris*."

The book, as was to be expected, deals with the systematic botany of the cactus family, but more thoroughly than any other as yet issued. The only other work of monographic pretensions is Karl Schumann's *Gesamtbeschreibung der Kakteen* issued in 1903. As an illustration of the difference in the volumes, *Opuntia* proper in the new book contains 254 species, in the old one, 162. Not all of the increase is due to the newer taxonomy; in fact a surprising amount of it is due to exploration, and to the consequent discovery of new kinds of prickly pears. This group occupies the major part of the volume, and segregates from it, with *Pereskia*, the whole of it. The extent of the exploration, from British Columbia to the Argentine, its comprehensive nature, including hundreds of the islands and keys of the West Indies, its personnel which has included nearly all the botanists with tropical experience in the United States and many of our South American and West Indian neighbors,—this has given the authors who have done a tremendous amount of exploration themselves, an opportunity for comparative study

* Britton, N. L. and Rose, J. N. *The Cactaceae. Descriptions and Illustrations of Plants of the Cactus Family.* Vol. 1, pp. 1-236. Plates 1-36 (many in color), figs. 1-303. Carnegie Institution of Washington, Publication No. 248. 21 June 1919. Price \$18.00.

of these puzzling plants, that they have used to splendid advantage.

Detailed comment of such a large work is obviously impossible, but mention should be made of the scheme the authors have followed. There are, of course, keys to the tribes, genera under the tribes, and to the series and species where the genera are large enough to need such subdivisions.

For each of the species there is a complete synonymy, and where, as in *Opuntia*, there are 900 names known for about 250 plants this will be of great value. There follows a description of the species, a statement of its type locality and the distribution of it. Notes of its variants, its affinities to related species, illustration of it and other items, complete the record of the treatment. Very nearly all the species are illustrated by photographs of mature plants, drawings of significant parts, or by colored illustrations of the joints or flowers or fruits. No recent botanical work has such a wealth of illustrations, and in such plants as the cactus, which exhibit different characters at different periods of growth, these are of paramount value in aiding identification.

The prickly pears, comprising four fifths of the volume, are grouped into 3 subgenera and 46 series, the characters of which are based on a study of living plants of which the New York Botanical Garden and the Department of Agriculture now have the largest collections known. Scores of cases of mistaken identity, of the description of stages of one species as several, of mistaken ideas of distribution and the other hazards due to the difficulty of the group and early misconceptions, are now straightened out. The gardener, field botanist, plant geographer and ecologist can now find for the first time an accurate record of the species and their distribution. Such a work and its changes will produce shocks to the mentally well-intrenched, as for instance, that the supposedly widely distributed *Opuntia tuna* is actually confined to the lowlands of Jamaica; that *O. vulgaris* Mill. long supposed to be native hereabouts, does not occur in North America except as an escape in Cuba, and many other errors that have passed current.

An interesting tabulation could be made by those interested in endemism on the number of prickly pears with a relatively restricted distribution. Scores have been found only in isolated regions, a few scattered through neighboring cactus deserts, still fewer of very general distribution in tropical America, of which *Opuntia ficus-indica* seems to be the most ubiquitous.* As the group is wholly American, the distribution in North or South America, or in the West Indies, plotted out as to the apparent centers of distribution of some of the significant species, would be of particular interest. As a partial aid to such an understanding, the reviewer lists the chief cactus regions of the area covered by the book with the number of species recorded from there by the authors.

Southwestern United States and adjacent Mexico.....	63
Mexico and Central America.....	62
The Argentine, including Paraguay, Uruguay & Chile.....	61

As between these two great centers of cactus species, for the first two are probably inseparable, the links are very few and scattered. The authors record only three species that are common, as natives, to both regions and are found in the intervening area. There are, of course, other prickly pears between these two great centers as, for instance, 12 in Bolivia, 14 in Peru, 9 in Ecuador, 7 in Brazil, 5 in Colombia, and 4 in Venezuela and adjacent islands.

These 56 species, endemics nearly all, and often separated by rain forests, seem a somewhat slender thread to stretch across the three or four thousand miles between the northern and southern culminations of the cactus flora. As a matter of record, the figures for the rest of the genus are given herewith. West Indies 15, Bahamas 4, Tropical America generally 3, Southeastern United States 11, Central United States 6, Northeastern United

* An interesting case of apparent endemism is that of *O. Skottsbergii*, a species described as new in the book. It is native in Santa Cruz territory in the Argentine, and, apparently unknown to the authors, was described briefly, it is true, by Skottsberg in his *Die Vegetationsverhältnisse Längs der Cordillera de los Andes*, which was published on April 26, 1916, in *Kungl. Sv. Vetenskapsakademiens Handlingar*, Band 56, no. 5, at page 268. Dr. Skottsberg credits the species to the authors of the present volume, so there is fortunately only a question of priority of publications involved in the case, not another name added to the nine hundred!

States 1, Galapagos Islands 1. The other genera of the Cactaceae may reveal, when the authors have completed the four volumes which will comprise the work, some further data on these problems of distribution. Not the least valuable feature of the book is the basis it will furnish for such studies, and in the final volume it is to be hoped the authors will include such data.

Something has recently been issued or spoken about coöperation in science. This attack upon the problems of the Cactaceae, largely engineered by Messrs. Britton and MacDougal, has secured the cooperation of the Carnegie Institution, New York Botanical Garden, U. S. National Museum, U. S. Department of Agriculture, and the Gray Herbarium. Add to this hosts of individuals who have contributed notes or specimens and it is little wonder that, under the guidance of the authors, the book should have grown into incomparably the best one on its subject that has yet appeared.

N. T.

NEWS ITEMS.

Professor Edward W. Berry, of the Johns Hopkins University, has returned to Baltimore after six months exploration of the Andes of Peru, Bolivia and Chile.

At the New York Botanical Garden the lectures for the latter part of November will be held in the Central Display Greenhouses at three-fifteen o'clock. They will occupy half an hour, will be illustrated by living plants and followed by demonstrations in the greenhouses. The dates and subjects are as follows:

Nov. 15. "Cycads and Sago Palms," by Dr. N. [L. Britton.

Nov. 22. "Tropical Orchids," by Mr. Geo. V. Nash.

Nov. 29. "Tropical Ferns and Their Relatives," by Dr. H. A. Gleason.

In a recent flight from Italy to Paris an aeroplane, which was carrying as a passenger Mr. Aaron Aaronsohn, was wrecked, killing both occupants. Mr. Aaronsohn will be remembered by the Club as the director of the Jewish Agricultural Experiment